

What is claimed is:

1. A high-pressure discharge lamp, comprising:
a discharge chamber that is formed in a silica
glass tube;
a pair of electrodes each having one end that confronts
5 one end of the other electrode in said discharge chamber;
metal foil parts that each are superposed and
connected to the other ends of said electrodes; the end of
each metal foil part on the side of said electrode being
formed as a tapered portion, and moreover, the tip of each
10 said tapered portion on the side of the electrode being,
with respect to its direction of width, within the width
in the radial direction of said electrode;
sealing sections for forming a hermetic seal of
said discharge chamber, these sealing sections being parts
15 for embedding said other ends of said electrodes and said
metal foil parts in glass at the two ends of said silica
glass tube in a state such that the vicinity of each
junction of said electrodes and said metal foil parts is
wrapped in a metal coil.
2. A high-pressure discharge lamp according to
claim 1, wherein mercury, halogen gas, and an inert gas
are sealed in said discharge chamber.

3. A high-pressure discharge lamp according to claim 2, wherein said metal coils are wrapped cover end portions of said electrodes on the side of said metal foil parts.

4. A high-pressure discharge lamp according to claim 2, wherein width W_c of the tips of the tapered portions of said metal foil parts on the side of said electrodes is prescribed to a dimension that satisfies:

5
$$W_c \leq D$$

where D is the diameter of said electrodes.

5. A high-pressure discharge lamp according to claim 4, wherein width W_c of the tips of the tapered portions of said metal foil parts on the side of said electrodes is prescribed to be a dimension that satisfies:

5
$$W_c \leq 0.8 D$$

where D is the diameter of said electrodes.

6. A high-pressure discharge lamp according to claim 2, wherein coil diameter d of said metal coils is prescribed to be a dimension that satisfies:

$$D/8 \leq d \leq D/2$$

5 where D is the diameter of said electrodes.

7. A high-pressure discharge lamp according to

claim 2, wherein coil length L1 of said metal coils is prescribed to be a dimension that satisfies:

$$L1 \geq 2D$$

5 where D is the diameter of said electrodes.

8. A high-pressure discharge lamp according to claim 2, wherein cut length L2 of the tapered portions of said metal foil parts is prescribed to be a dimension that satisfies:

5
$$W \leq L2 \leq 3W$$

where W is the width of said metal foil parts.

9. A high-pressure discharge lamp according to claim 2, wherein:

said mercury is injected to at least 0.12 mg/mm³;

at least one of chlorine, bromine, and iodine is

5 injected as said halogen gas such that the halogen gas partial pressure in said discharge chamber is within the range $1 \times 10^{-8} - 1 \times 10^{-6}$ $\mu\text{mol/mm}^3$; and moreover,

the residual oxygen partial pressure in said discharge chamber is equal to or less than 2.5×10^{-3} Pa.

10. A high-pressure discharge lamp according to claim 9, wherein, of the portion of said electrodes that is embedded in glass, an airtight contact is not established between electrode surfaces on which said metal

5 coils are not wrapped and glass surrounding these
electrode surfaces.

11. A method of fabricating a high-pressure
discharge lamp,
said high-pressure discharge lamp comprising a discharge
chamber that is formed in a silica glass tube; a pair of
5 electrodes each having one end that confronts one end of
the other electrode in said discharge chamber; metal foil
parts that each overlie and connect to the other ends of
said electrodes; metal coils that are wrapped in the
vicinities of the junctions of said electrodes and said
10 metal foil parts; sealing sections for forming a hermetic
seal of said discharge chamber, these sealing sections
being parts for embedding said other ends of said
electrodes, said metal coils, and said metal foil parts in
glass at the two ends of said silica glass tube; wherein
15 the ends of said metal foil parts on the electrode side
are formed as tapered portions; the tips of said tapered
portions on the electrode side are, with respect to the
direction of width of the tapered portions, within the
width in the radial direction of said electrodes; and
20 mercury, halogen gas, and an inert gas are injected in
said discharge chamber;

said method comprising:

a bulb formation step for using a silica glass

tube to form a bulb having a swelled portion for said
25 discharge chamber;

an electrode assembly fabrication step for
fabricating electrode assemblies by: inserting a metal
coil on each of said electrodes, superposing the end of
said electrode and the tapered portion of said metal foil
30 part, and then, either before or after shifting and
securing said metal coil to a position that covers the
superposed portion, connecting said electrode and said
metal foil part by crimping or welding;

a first electrode incorporation step for inserting
35 one of said electrode assemblies into the opening of one
end of said silica glass tube;

a first sealing step for heating one end of said
silica glass tube to embed the other end of said electrode,
said metal coil, and said metal foil part in the glass of
40 this end and thus establish a hermetic seal of said
discharge chamber;

a mercury introduction step for introducing said
mercury into said discharge chamber from the opening at
the other end of said silica glass tube;

45 a second electrode assembly incorporation step for
inserting the another of said electrode assemblies into
the opening at the other end of said silica glass tube;

an evacuation step for evacuating air inside said
discharge chamber from the opening of the other end of

50 said silica glass tube;

an inert gas introduction step for introducing
said inert gas into said discharge chamber from the
opening of the other end of said silica glass tube;

a halogen gas introduction step for introducing
55 said halogen gas into said discharge chamber from the
opening at the other end of said silica glass tube; and

a second sealing step for heating the other end of
said silica glass tube to embed the other end of said
electrode, said metal coil, and said metal foil part in
60 the glass of this other end and thus hermetically seal
said discharge chamber.

12. A method of fabricating a high-pressure
discharge lamp according to claim 11, wherein:

in said evacuation step, air is evacuated such
that the partial pressure of residual oxygen in said
5 discharge chamber is less than or equal to 2.5×10^{-3} Pa;
in said mercury introduction step, mercury is introduced
such that the amount of mercury that is injected is at
least 0.12 mg/mm^3 with respect to the spatial volume in
said discharge chamber; and

10 in said halogen gas introduction step, halogen gas
is introduced such that the partial pressure of said
halogen gas in said discharge chamber is within the range
from 1×10^{-8} to $1 \times 10^{-6} \text{ } \mu\text{mol/mm}^3$.